

CLAIMS

1. A hologram recording method comprising the steps of: modulating a laser beam by a one-dimensional optical modulator in which a plurality of light-modulating pixels are arranged; recording a digital-data signal on a hologram recording medium; and recording sync signals on said hologram recording medium in two or more positions retaining a predetermined interval by means of part of the light-modulating pixels in said one-dimensional optical modulator.

2. A hologram-record reproducing method comprising the steps of:

applying reference light to a hologram recording medium having a digital data recording section, and a sync signal recording section formed in two or more positions retaining a predetermined interval, reading said digital data and said sync signals, and detecting a shift in a position of said digital-data signal by the sync signals.

3. A hologram recording apparatus comprising:

a laser beam source,

split means for splitting a laser beam from the laser beam source into a first laser beam and a second laser beam,

a one-dimensional optical modulator in which a plurality of

light-modulating pixels are arranged, and
a hologram-recording-medium disposing portion,
wherein part of the light-modulating pixels in said one-dimensional optical modulator optically modulate part of said first laser beam by a digital-data signal, and at least part of the other light-modulating pixels in two or more positions in said one-dimensional optical modulator optically modulate at least part of the other of said first laser beam by sync signals to obtain signal light by a laser beam,

the signal light and reference light by said second laser beam are applied to a hologram recording medium to form on the hologram recording medium a recording section for said digital-data signal and recording sections for said sync signals in two or more positions having a predetermined interval.

4. A hologram recording apparatus according to claim 3,
wherein said one-dimensional optical modulator is formed of an array of a plurality of reflecting ribbons, and
each reflecting ribbon has a diffraction grating structure in which a phase of an arriving laser beam is modulated by the displacement of the ribbon to be reflected and diffracted light is generated.

5. A hologram recording and reproducing apparatus

comprising:

a laser beam source,

split means for splitting a laser beam from the laser beam source into a first laser beam and a second laser beam,

a one-dimensional optical modulator in which a plurality of light-modulating pixels are arranged,

a hologram-recording-medium disposing portion, and

a photodetector at least in one dimension, having a larger number of light-detecting elements than that of the light-modulating pixels in said one-dimensional optical modulator,

wherein at the time of recording, part of light-modulating pixels in said one-dimensional optical modulator optically modulate part of said first laser beam by a digital-data signal and at least part of the other light-modulating pixels in two or more positions in said one-dimensional optical modulator optically modulate at least part of the other of said first laser beam by sync signals to obtain signal light;

the signal light and reference light by said second laser beam are applied to the hologram recording medium to form on the hologram recording medium a recording section for said digital-data signal and recording sections for said sync signals in two or more positions retaining a predetermined interval; and

at the time of reproduction, the reference light by said second laser beam is applied to said hologram recording medium,

said light-detecting elements in said photodetector receive reproduced light obtained from the hologram recording medium, and said digital-data signal and said sync signals are detected to detect a shift in a position of said digital-data signal by the sync signals.

6. A hologram reproducing apparatus comprising:

a laser beam source,

a photodetector including an array of a plurality of light-detecting elements, and

a hologram-recording-medium disposing portion having a recording section for digital-data signal, and recording sections for sync signals in two or more positions,

wherein reference light by a laser beam from said laser beam source is applied to the hologram recording medium disposed in said disposing portion to obtain reproduced light including said digital-data signal and said sync signals recorded on the hologram recording medium, and the reproduced light is detected by said photodetector to detect a shift in a position of said digital-data signal by said sync signals.